Where:

EC = The vehicle energy consumption in watt-hours per mile, for combined FTP/HFET operation, determined according to procedures established by the Administrator under § 600.116–12.

GRIDLOSS = 0.93 for the 2012 through 2016 model years, and 0.935 for the 2017 and later model years (to account for grid transmission losses).

AVGUSUP = 0.642 for the 2012 through 2016 model years, and 0.534 for the 2017 and later model years (the nationwide average electricity greenhouse gas emission rate at the powerplant, in grams per watt-hour).

2478 is the estimated grams of upstream greenhouse gas emissions per gallon of gasoline.

8887 is the estimated grams of CO_2 per gallon of gasoline.

TargetCO_2 = The CO_2 Target Value for the fuel cell or electric vehicle determined according to § 86.1818 of this chapter for the appropriate model year.

(2) For plug-in hybrid electric vehicles the carbon-related exhaust emissions in grams per mile is to be calculated according to the provisions of § 600.116, except that the CREE for charge-depleting operation shall be the sum of the CREE associated with gasoline consumption and the net upstream CREE determined according to paragraph (n)(1)(i) of this section, rounded to the nearest one gram per mile.

(3) For 2012 and later model year fuel cell vehicles, the carbon-related exhaust emissions in grams per mile shall be calculated using the method specified in paragraph (n)(1) of this section, except that $CREE_{UP}$ shall be determined according to procedures established by the Administrator under § 600.111–08(f). As described in § 86.1866 of this chapter the value of CREE may be set equal to zero for a certain number of 2012 through 2025 model year fuel cell vehicles.

[76 FR 39533, July 6, 2011, as amended at 77 FR 63179, Oct. 15, 2012]

§ 600.114–12 Vehicle-specific 5-cycle fuel economy and carbon-related exhaust emission calculations.

Paragraphs (a) through (f) of this section apply to data used for fuel economy labeling under subpart D of this part. Paragraphs (d) through (f) of this section are used to calculate 5-cycle carbon-related exhaust emission values for the purpose of determining optional credits for CO_2-reducing technologies under § 86.1866 of this chapter and to calculate 5-cycle CO_2 values for the purpose of fuel economy labeling under subpart D of this part.

(a) *City fuel economy.* For each vehicle tested under § 600.010–08(a), (b), or (c), as applicable, determine the 5-cycle city fuel economy using the following equation:

$$(1)\ \text{CityFE} = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \left(\frac{(0.76 \times \text{StartFuel}_{75} + 0.24 \times \text{StartFuel}_{20})}{4.1} \right)$$

$$\text{StartFuel}_{x} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{x}} - \frac{1}{\text{Bag 3 FE}_{x}} \right]$$

$$\text{RunningFC} = 0.82 \times \left[\frac{0.48}{\text{Bag 2 FE}_{75}} + \frac{0.41}{\text{Bag 3 FE}_{75}} + \frac{0.11}{\text{US06 City FE}} \right] + 0.18 \times \left[\frac{0.5}{\text{Bag 2 FE}_{20}} + \frac{0.5}{\text{Bag 3 FE}_{20}} \right]$$
$$+ 0.133 \times 1.083 \times \left[\frac{1}{\text{SC0 3FE}} - \left(\frac{0.61}{\text{Bag 3 FE}_{75}} + \frac{0.39}{\text{Bag 2 FE}_{75}} \right) \right]$$

(2) Terms used in the equations in this paragraph (a) are defined as follows:

Bag Y FE_X = the fuel economy in miles per gallon of fuel during bag Y of the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.

SC03 FE = fuel economy in mile per gallon over the SC03 test.

US06 City FE = fuel economy in miles per gallon over the ''city'' portion of the US06 test.

(b) *Highway fuel economy.* (1) For each vehicle tested under § 600.010–08(a), (b), or (c), as applicable, determine the 5-cycle highway fuel economy using the following equation:

$$\text{HighwayFE} = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \left(\frac{(0.76 \times \text{StartFuel}_{75} + 0.24 \times \text{StartFuel}_{20})}{60} \right)$$

$$\text{StartFuel}_{x} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{x}} - \frac{1}{\text{Bag 3 FE}_{x}} \right]$$

$$\text{RunningFC} = 1.007 \times \left[\frac{0.79}{\text{US06 HighwayFE}} + \frac{0.21}{\text{HFET FE}} \right] + 0.133 \times 0.377 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{0.61}{\text{Bag 3 FE}_{75}} + \frac{0.39}{\text{Bag 2 FE}_{75}} \right) \right]$$

(2) If the condition specified in § 600.115–08(b)(2)(iii)(B) is met, in lieu of using the calculation in paragraph (b)(1) of this section, the manufacturer may optionally determine the highway fuel economy using the following modified 5-cycle equation which utilizes data from FTP, HFET, and US06 tests, and applies mathematic adjustments for Cold FTP and SC03 conditions:

(i) Perform a US06 test in addition to the FTP and HFET tests.

(ii) Determine the 5-cycle highway fuel economy according to the following formula:

$$\text{HighwayFE} = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \frac{(0.005515 + 1.13637 \times \text{StartFuel}_{75})}{60}$$

$$\text{StartFuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{75}} - \frac{1}{\text{Bag 3 FE}_{75}} \right]$$

$$\text{RunningFC} = 1.007 \times \left[\frac{0.79}{\text{US06 Highway FE}} + \frac{0.21}{\text{HFET FE}} \right] + \left[0.377 \times 0.133 \times \left(0.00540 + \frac{0.1357}{\text{US06 FE}} \right) \right]$$

(3) Terms used in the equations in this paragraph (b) are defined as follows:

Bag Y FE_X = the fuel economy in miles per gallon of fuel during bag Y of

the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.
HFET FE = fuel economy in miles per gallon over the HFET test.
SC03 FE = fuel economy in mile per gallon over the SC03 test.
US06 Highway FE = fuel economy in miles per gallon over the highway portion of the US06 test.
US06 FE = fuel economy in miles per gallon over US06 test.

(c) *Fuel economy calculations for hybrid electric vehicles.* Test hybrid electric vehicles as described in SAE J1711 (incorporated by reference in § 600.011). For FTP testing, this generally involves emission sampling over four phases (bags) of the UDDS (cold-start, transient, warm-start, transient); however, these four phases may be combined into two phases (phases 1 + 2 and phases 3 + 4). Calculations for these sampling methods follow:

(1) *Four-bag FTP equations.* If the 4-bag sampling method is used, manufacturers may use the equations in paragraphs (a) and (b) of this section to determine city and highway fuel economy estimates. If this method is chosen, it must be used to determine both city and highway fuel economy. Optionally, the following calculations may be used, provided that they are used to determine both city and highway fuel economy:

(i) *City fuel economy.*

$$CityFE = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \left(\frac{(0.76 \times \text{StartFuel}_{75} + 0.24 \times \text{StartFuel}_{20})}{4.1} \right)$$

$$\text{StartFuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{75}} - \frac{1}{\text{Bag 3 FE}_{75}} \right] + 3.9 \times \left[\frac{1}{\text{Bag 2 FE}_{75}} - \frac{1}{\text{Bag 4 FE}_{75}} \right]$$

$$\text{StartFuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}} \right]$$

$$\text{RunningFC} = 0.82 \times \left[\frac{0.48}{\text{Bag 4 FE}_{75}} + \frac{0.41}{\text{Bag 3 FE}_{75}} + \frac{0.11}{\text{US06 City FE}} \right]$$
$$+ 0.18 \times \left[\frac{0.5}{\text{Bag 2 FE}_{20}} + \frac{0.5}{\text{Bag 3 FE}_{20}} \right] + 0.133 \times 1.083 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{0.61}{\text{Bag 3 FE}_{75}} + \frac{0.39}{\text{Bag 4 FE}_{75}} \right) \right]$$

(ii) *Highway fuel economy.*

$$\text{HighwayFE} = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \left(\frac{(0.76 \times \text{StartFuel}_{75}) + (0.24 \times \text{StartFuel}_{20})}{60} \right)$$

$$\text{StartFuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{75}} - \frac{1}{\text{Bag 3 FE}_{75}} \right] + 3.9 \times \left[\frac{1}{\text{Bag 2 FE}_{75}} - \frac{1}{\text{Bag 4 FE}_{75}} \right]$$

$$\text{StartFuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}} \right]$$

$$\text{RunningFC} = 1.007 \times \left[\frac{0.79}{\text{US06 Highway FE}} + \frac{0.21}{\text{HFET FE}} \right] + 0.133 \times 0.377 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{0.61}{\text{Bag 3 FE}_{75}} + \frac{0.39}{\text{Bag 4 FE}_{75}} \right) \right]$$

(2) *Two-bag FTP equations.* If the 2-bag sampling method is used for the 75 °F FTP test, it must be used to determine both city and highway fuel economy. The following calculations must be used to determine both city and highway fuel economy:

(i) *City fuel economy.*

$$CityFE = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \left(\frac{(0.76 \times \text{StartFuel}_{75}) + (0.24 \times \text{StartFuel}_{20})}{4.1} \right)$$

$$\text{StartFuel}_{75} = 7.5 \times \left[\frac{1}{\text{Bag 1/2 FE}_{75}} - \frac{1}{\text{Bag 3/4 FE}_{75}} \right]$$

$$\text{StartFuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag 1 FE}_{20}} - \frac{1}{\text{Bag 3 FE}_{20}} \right]$$

$$\text{RunningFC} = 0.82 \times \left[\frac{0.90}{\text{Bag 3/4 FE}_{75}} + \frac{0.10}{\text{US06 City FE}} \right]$$
$$+ 0.18 \times \left[\frac{0.5}{\text{Bag 2 FE}_{20}} + \frac{0.5}{\text{Bag 3 FE}_{20}} \right] + 0.133 \times 1.083 \times \left[\frac{1}{\text{SC03 FE}} - \left(\frac{1.0}{\text{Bag 3/4 FE}_{75}} \right) \right]$$

(ii) *Highway fuel economy.*

$$\text{HighwayFE} = \frac{0.905}{(\text{StartFC} + \text{RunningFC})}$$

Where:

$$\text{StartFC} = 0.33 \times \left(\frac{(0.76 \times \text{StartFuel}_{75}) + (0.24 \times \text{StartFuel}_{20})}{60} \right)$$

$$\text{StartFuel}_{75} = 7.5 \times \left[\frac{1}{\text{Bag}\,1/2\,\text{FE}_{75}} - \frac{1}{\text{Bag}\,3/4\,\text{FE}_{75}} \right]$$

$$\text{StartFuel}_{20} = 3.6 \times \left[\frac{1}{\text{Bag}\,1\,\text{FE}_{20}} - \frac{1}{\text{Bag}\,3\,\text{FE}_{20}} \right]$$

$$\text{RunningFC} = 1.007 \times \left[\frac{0.79}{\text{US06HighwayFE}} + \frac{0.21}{\text{HFETFE}} \right] + 0.133 \times 0.377 \times \left[\frac{1}{\text{SC03FE}} - \left(\frac{1.0}{\text{Bag3/4FE}_{75}} \right) \right]$$

(3) For hybrid electric vehicles using the modified 5-cycle highway calculation in paragraph (b)(2) of this section, the equation in paragraph (b)(2)(ii)(A) of this section applies except that the equation for Start Fuel_{75} will be replaced with one of the following:

(i) The equation for Start Fuel_{75} for hybrids tested according to the 4-bag FTP is:

$$\text{StartFuel}_{75} = 3.6 \times \left[\frac{1}{\text{Bag}\,1\,\text{FE}_{75}} - \frac{1}{\text{Bag}\,3\,\text{FE}_{75}} \right] + 3.9 \times \left[\frac{1}{\text{Bag}\,2\,\text{FE}_{75}} - \frac{1}{\text{Bag}\,4\,\text{FE}_{75}} \right]$$

(ii) The equation for Start Fuel_{75} for hybrids tested according to the 2-bag FTP is:

$$\text{StartFuel}_{75} = 7.5 \times \left[\frac{1}{\text{Bag}\,1/2\,\text{FE}_{75}} - \frac{1}{\text{Bag}\,3/4\,\text{FE}_{75}} \right]$$

(4) Terms used in the equations in this paragraph (b) are defined as follows:

Bag X/Y FE_{75} = fuel economy in miles per gallon of fuel during combined phases X and Y of the FTP test conducted at an ambient temperature of 75 °F.

Bag Y FE_X = the fuel economy in miles per gallon of fuel during bag Y of the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.

HFET FE = fuel economy in miles per gallon over the HFET test.

SC03 FE = fuel economy in mile per gallon over the SC03 test.

US06 City FE = fuel economy in miles per gallon over the city portion of the US06 test.

US06 Highway FE = fuel economy in miles per gallon over the highway portion of the US06 test.

(d) *City CO_2 emissions and carbon-related exhaust emissions.* For each vehicle tested, determine the 5-cycle city CO_2 emissions and carbon-related exhaust emissions using the following equation:

$$(1)\ \text{City CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\text{StartCREE} = 0.33 \times \left(\frac{(0.76 \times \text{Start CREE}_{75} + 0.24 \times \text{Start CREE}_{20})}{4.1} \right)$$

$$\text{Start CREE}_{X} = 3.6 \times (\text{Bag 1 CREE}_{X} - \text{Bag 3 CREE}_{X})$$

$$\text{Running CREE} = 0.82 \times \left[(0.48 \times \text{Bag2CREE}_{75}) + (0.41 \times \text{Bag3CREE}_{75}) + (0.11 \times \text{US06 City CREE}) \right] +$$
$$0.18 \times \left[(0.5 \times \text{Bag2CREE}_{20}) + (0.5 \times \text{Bag3CREE}_{20}) \right] +$$
$$0.133 \times 1.083 \times \left[\text{SC03 CREE} - ((0.61 \times \text{Bag3CREE}_{75}) + (0.39 \times \text{Bag2CREE}_{75})) \right]$$

(2) To determine the City CO_2 emissions, use the appropriate CO_2 grams/mile values instead of CREE values in the equations in this paragraph (d).

(3) Terms used in the equations in this paragraph (d) are defined as follows:

Bag Y $CREE_X$ = the carbon-related exhaust emissions in grams per mile during bag Y of the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.

US06 City CREE = carbon-related exhaust emissions in grams per mile over the city portion of the US06 test.

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

(e) *Highway CO_2 emissions and carbon-related exhaust emissions.* (1) For each vehicle tested, determine the 5-cycle highway carbon-related exhaust emissions using the following equation:

$$\text{Highway CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\text{Start CREE} = 0.33 \times \left(\frac{(0.76 \times \text{Start CREE}_{75}) + \left(\begin{matrix} 0.24 \times \text{Start} \\ \text{CREE}_{20} \end{matrix} \right)}{60} \right)$$

$$\text{Start CREE}_{X} = 3.6 \times (\text{Bag 1 CREE}_{X} - \text{Bag 3 CREE}_{X})$$

Running CREE =

$$1.007 \times [(0.79 \times \text{US06 Highway CREE}) + (0.21 \times \text{HFET CREE})] +$$
$$0.133 \times 0.377 \times [\text{SC03 CREE} - ((0.61 \times \text{Bag3CREE}_{75}) + (0.39 \times \text{Bag2CREE}_{75}))]$$

(2) If the condition specified in § 600.115–08(b)(2)(iii)(B) is met, in lieu of using the calculation in paragraph (e)(1) of this section, the manufacturer may optionally determine the highway carbon-related exhaust emissions using the following modified 5-cycle equation which utilizes data from FTP, HFET, and US06 tests, and applies mathematic adjustments for Cold FTP and SC03 conditions:

(i) Perform a US06 test in addition to the FTP and HFET tests.

(ii) Determine the 5-cycle highway carbon-related exhaust emissions according to the following formula:

$$\text{Highway CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\text{StartCREE} = 0.33 \times \frac{((0.005515 \times \text{A}) + 1.13637 \times \text{StartCREE}_{75})}{60}$$

Start $CREE_{75}$ = 3.6 × (Bag $1CREE_{75}$ − Bag $3CREE_{75}$)

Running CREE = 1.007 × [(0.79 × US06 Highway CREE) + (0.21 × HFET CREE)] + [0.377 × 0.133 × ((0.00540 × A) + (0.1357 × US06 CREE))]

(3) To determine the Highway CO_2 emissions, use the appropriate CO_2

grams/mile values instead of CREE values in the equations in this paragraph (e).

(4) Terms used in the equations in this paragraph (e) are defined as follows:

A = 8,887 for gasoline-fueled vehicles, 10,180 for diesel-fueled vehicles, or an appropriate value specified by the Administrator for other fuels.

Bag Y $CREE_X$ = the carbon-related exhaust emissions in grams per mile during bag Y of the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.

US06 Highway CREE = carbon-related exhaust emissions in grams per mile over the highway portion of the US06 test.

US06 CREE = carbon-related exhaust emissions in grams per mile over the US06 test.

HFET CREE = carbon-related exhaust emissions in grams per mile over the HFET test.

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

(f) *CO_2 and carbon-related exhaust emissions calculations for hybrid electric vehicles.* Test hybrid electric vehicles as described in SAE J1711 (incorporated by reference in § 600.011). For FTP testing, this generally involves emission sampling over four phases (bags) of the UDDS (cold-start, transient, warm-start, transient); however, these four phases may be combined into two phases (phases 1 + 2 and phases 3 + 4). Calculations for these sampling methods follow:

(1) *Four-bag FTP equations.* If the 4-bag sampling method is used, manufacturers may use the equations in paragraphs (a) and (b) of this section to determine city and highway CO_2 and carbon-related exhaust emissions values. If this method is chosen, it must be used to determine both city and highway CO_2 emissions and carbon-related exhaust emissions. Optionally, the following calculations may be used, provided that they are used to determine both city and highway CO_2 and carbon-related exhaust emissions values:

(i) *City CO_2 emissions and carbon-related exhaust emissions.*

$$\text{City CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\text{Start CREE} = 0.33 \times \left(\frac{(0.76 \times \text{Start CREE}_{75} + 0.24 \times \text{Start CREE}_{20})}{4.1} \right)$$

$$\text{Start CREE}_{75} = 3.6 \times (\text{Bag 1 CREE}_{75} - \text{Bag 3 CREE}_{75}) + 3.9 \times (\text{Bag 2 CREE}_{75} - \text{Bag 4 CREE}_{75})$$

$$\text{Start CREE}_{20} = 3.6 \times (\text{Bag 1 CREE}_{20} - \text{Bag 3 CREE}_{20})$$

$$\text{Running CREE} = 0.82 \times [(0.48 \times \text{Bag4CREE}_{75}) + (0.41 \times \text{Bag3CREE}_{75}) + (0.11 \times \text{US06 City CREE})] + 0.18 \times [(0.5 \times \text{Bag2CREE}_{20}) + (0.5 \times \text{Bag3CREE}_{20})] + 0.133 \times 1.083 \times [\text{SC03 CREE} - ((0.61 \times \text{Bag3CREE}_{75}) + (0.39 \times \text{Bag4CREE}_{75}))]$$

(ii) *Highway CO_2 emissions and carbon-related exhaust emissions.*

$$\text{Highway CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\text{Start CREE} = 0.33 \times \left(\frac{(0.76 \times \text{Start CREE}_{75} + 0.24 \times \text{Start CREE}_{20})}{60} \right)$$

$$\text{Start CREE}_{75} = 3.6 \times (\text{Bag 1 CREE}_{75} - \text{Bag 3 CREE}_{75}) + 3.9 \times (\text{Bag 2 CREE}_{75} - \text{Bag 4 CREE}_{75})$$

$$\text{Start CREE}_{20} = 3.6 \times (\text{Bag 1 CREE}_{20} - \text{Bag 3 CREE}_{20})$$

$$\text{Running CREE} = 1.007 \times [(0.79 \times \text{US06 Highway CREE}) + (0.21 \times \text{HFET CREE})] +$$
$$0.133 \times 0.377 \times [\text{SC03 CREE} - ((0.61 \times \text{Bag3CREE}_{75}) + (0.39 \times \text{Bag4CREE}_{75}))]$$

(2) *Two-bag FTP equations.* If the 2-bag sampling method is used for the 75 °F FTP test, it must be used to determine both city and highway CO_2 emissions and carbon-related exhaust emissions. The following calculations must be used to determine both city and highway CO_2 emissions and carbon-related exhaust emissions:

(i) *City CO_2 emissions and carbon-related exhaust emissions.*

$$\text{City CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\textit{Start CREE} = 0.33 \times \left(\frac{(0.76 \times \text{Start CREE}_{75} + 0.24 \times \text{Start CREE}_{20})}{4.1} \right)$$

$$\text{Start CREE}_{75} = 7.5 \times (\text{Bag1/2 CREE}_{75} - \text{Bag3/4 CREE}_{75})$$

$$\text{StartCREE}_{20} = 3.6 \times (\text{Bag1CREE}_{20} - \text{Bag3CREE}_{20})$$

$$\text{RunningCREE} = 0.82 \times [(0.90 \times \text{Bag3/4CREE}_{75}) + (0.10 \times \text{US06CityCREE})] +$$
$$0.18 \times [(0.5 \times \text{Bag2CREE}_{20}) + (0.5 \times \text{Bag3CREE}_{20})] +$$
$$0.133 \times 1.083 \times [\text{SC03CREE} - (\text{Bag3/4CREE}_{75})]$$

(ii) *Highway CO_2 emissions and carbon-related exhaust emissions.*

$$\text{Highway CREE} = \frac{(\text{Start CREE} + \text{Running CREE})}{0.905}$$

Where:

$$\text{Start CREE} = 0.33 \times \left(\frac{(0.76 \times \text{Start CREE}_{75} + 0.24 \times \text{Start CREE}_{20})}{60} \right)$$

$$\text{Start CREE}_{75} = 7.5 \times (\text{Bag1/2 CREE}_{75} - \text{Bag3/4 CREE}_{75})$$

$$\text{Start CREE}_{20} = 3.6 \times (\text{Bag1 CREE}_{20} - \text{Bag3 CREE}_{20})$$

$$\text{Running CREE} = 1.007 \times [(0.79 \times \text{US06 Highway CREE}) + (0.21 \times \text{HFET CREE})] +$$
$$0.133 \times 0.377 \times [\text{SC03 CREE} - \text{Bag3/4}_{75}\text{CREE}]$$

(3) For hybrid electric vehicles using the modified 5-cycle highway calculation in paragraph (e)(2) of this section, the equation in paragraph (e)(2)(ii)(A) of this section applies except that the equation for Start $CREE_{75}$ will be replaced with one of the following:

(i) The equation for Start $CREE_{75}$ for hybrids tested according to the 4-bag FTP is:

Start $CREE_{75}$= 3.6 × (Bag 1 $CREE_{75}$ − Bag 3 $CREE_{75}$ + 3.9 × (Bag 2 $CREE_{75}$ − Bag 4 $CREE_{75}$)

(ii) The equation for Start $CREE_{75}$ for hybrids tested according to the 2-bag FTP is:

Start $CREE_{75}$= 7.5 × (Bag ½ $CREE_{75}$ − Bag ¾ $CREE_{75}$)

(4) To determine the City and Highway CO_2 emissions, use the appropriate CO_2 grams/mile values instead of CREE values in the equations in paragraphs (f)(1) through (3) of this section.

(5) Terms used in the equations in this paragraph (e) are defined as follows:

Bag Y $CREE_X$ = the carbon-related exhaust emissions in grams per mile during bag Y of the FTP test conducted at an ambient temperature X of 75 °F or 20 °F.US06 City CREE = carbon-related exhaust emissions in grams per mile over the City portion of the US06 test.

SC03 CREE = carbon-related exhaust emissions in grams per mile over the SC03 test.

US06 Highway CREE = carbon-related exhaust emissions in grams per mile over the Highway portion of the US06 test.

HFET CREE = carbon-related exhaust emissions in grams per mile over the HFET test.

Bag X/Y $CREE_{75}$ = carbon-related exhaust emissions in grams per mile of fuel during combined phases X and Y of the FTP test conducted at an ambient temperature of 75 °F.

[76 FR 39538, July 6, 2011, as amended at 76 FR 57379, Sept. 15, 2011]

§ 600.115–11 Criteria for determining the fuel economy label calculation method.

This section provides the criteria to determine if the derived 5-cycle method for determining fuel economy label values, as specified in § 600.210–08(a)(2) or (b)(2) or § 600.210–12(a)(2) or (b)(2), as applicable, may be used to determine label values. Separate criteria apply to city and highway fuel economy for each test group. The provisions of this section are optional. If this option is not chosen, or if the criteria provided in this section are not met, fuel economy label values must be determined according to the vehicle-specific 5-cycle method specified in § 600.210–08(a)(1) or (b)(1) or § 600.210–12(a)(1) or (b)(1), as applicable. However, dedicated alternative-fuel vehicles, dual fuel vehicles when operating on the alternative fuel, plug-in hybrid electric vehicles while operating in charge-depleting mode, MDPVs, and vehicles imported by Independent Commercial Importers may use the derived 5-cycle method for determining fuel economy label values whether or not the criteria provided in this section are met. Manufacturers may alternatively account for this effect by multiplying 2-cycle fuel economy values by 0.7 and dividing 2-cycle CO_2 emission values by 0.7.

(a) *City fuel economy criterion.* (1) For each test group certified for emission compliance under § 86.1848 of this chapter, the FTP, HFET, US06, SC03 and Cold FTP tests determined to be official under § 86.1835 of this chapter are used to calculate the vehicle-specific 5-cycle city fuel economy which is then compared to the derived 5-cycle city fuel economy, as follows:

(i) The vehicle-specific 5-cycle city fuel economy from the official FTP, HFET, US06, SC03 and Cold FTP tests for the test group is determined according to the provisions of § 600.114–08(a) or (c) or § 600.114–12(a) or (c) and rounded to the nearest one tenth of a mile per gallon.

(ii) Using the same FTP data as used in paragraph (a)(1)(i) of this section, the corresponding derived 5-cycle city fuel economy is calculated according to the following equation: